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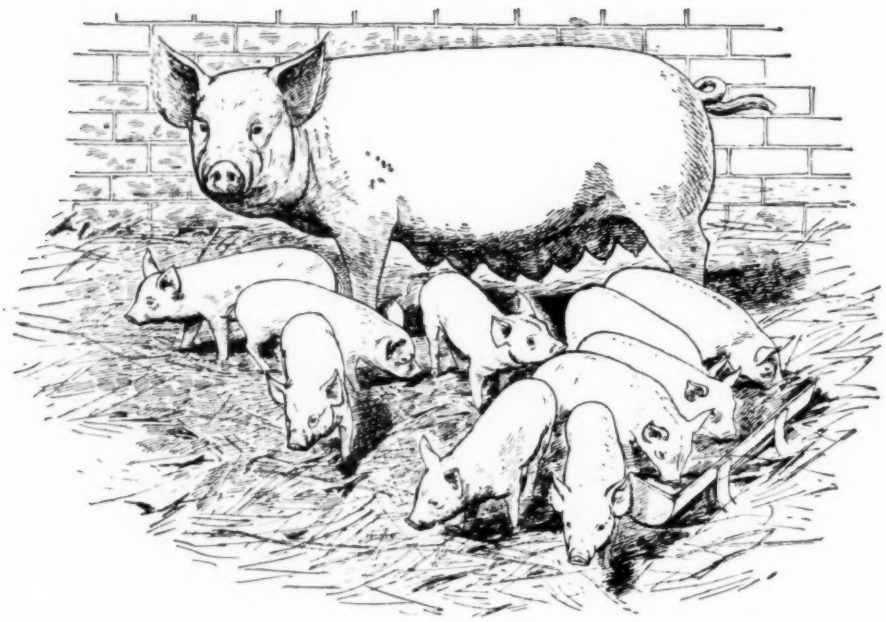

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Downing's Instructions for the Extracting of Calves, 1797

BY

SHERWIN A. HALL
Veterinary Investigation Centre, Tettenhall

Introduction

THE early printed works on veterinary medicine dealt in the main with the horse. Few books were devoted entirely to the diseases and treatment of cattle. Of those that were, one by Joseph Downing was of such merit as to deserve wide appreciation to-day.

The Text

The work was entitled: *A Treatise On The Disorders Incident To Horned Cattle . . . And An Appendix Containing Instructions For The Extracting Of Calves.*

A
TREATISE
ON THE
DISORDERS
INCIDENT TO
HORNED CATTLE,
COMPRISING A
Defcription of their Symptoms,
AND THE
MOST RATIONAL METHODS OF CURE,
FOUNDED ON LONG EXPERIENCE.

By J. DOWNING.

TO WHICH ARE ADDED,
RECEIPTS
FOR CURING THE
GRIPES, STAGGERS, and WORMS
IN
HORSES;
AND
AN APPENDIX,
CONTAINING INSTRUCTIONS FOR THE
EXTRACTING of CALVES.

Printed and Sold at Stourbridge.
SOLD ALSO BY
T. Hurst, Meſſrs. Longman and Rees, *Paternoſter-Row*; and Meſſrs. Rivington, *St. Paul's Church-Yard*,
London.
1797.

Smith (1924) dismises the main text as a rehash of Topham but he describes the Appendix as a "revelation." It certainly was a remarkable effort in an age when the treatment of cattle was shunned by the profession and relegated to cow leeches, the most ignorant of empirics.

Although unacknowledged, Downing's book had a profound influence on bovine obstetrics. In claiming to rescue Downing from obscurity, Smith (1924) records that the work was purloined by both Skellet, who published a well-known book on the subject in 1807, and Simonds who taught at the London School from 1842 to 1881.

Unfortunately Smith's monumental history of the veterinary profession was poorly supported, and as the subject is still largely neglected Downing remains as obscure as ever.

Such an appraisal demands that Downing's Instructions should now be quoted in full for probably the first time, in an acknowledged form, since they were first published in 1797.

Directions for Extracting Calves, etc.

To extract a calf when it presents itself in any improper position or unnatural way of lying in the cow, and in such postures that it cannot be extracted by the force of men and horses, without present death to either the cow, the calf, or both, until it is moved and replaced, so as to rectify the head and legs, placing them in such an extractionable position or proper form, as is hereafter described.

When the efforts of nature are not too much exhausted or weakened, by rendering the necessary assistance in a suitable manner; the extraction in most difficult cases will be easily completed, and the calf brought from the cow, without any injury either to the one or the other. Unless proper and timely relief be given, the cow or the calf is sure to be destroyed, to the utter loss of the owner, as I am confident great numbers of both have been lost in a moment, by people making an attempt to extract a calf, when it has been coming in a wrong position ; no one ought to go about the operation who is unskilled in the business, as too many within my observation have fatally done. I will therefore endeavour to lay down instructions every way sufficient and as plain as possible, which, if properly attended to, will be highly useful to individuals, and beneficial to mankind in general.

A Natural Position

Is when the calf lies in the calf bed or bag. A natural form is when the calf presents itself with its forefeet and head foremost, with its back upwards, or in the same direction as the cow's back, and the nose lying oetween the forefeet.

Observations

They who attempt the operation, must proceed with great care, when they undertake to examine or search the cow, by using the gentlest means possible, taking a proper opportunity to do it, while the pains or throes of the cow cease.

This is to be done after the bladder of water has been seen, with other evacuations, that always make an appearance some time previous to the calf coming.

Then should the cow remain very restless, with strong pains or throes upon her, for ten or a dozen quick and violent motions, and no part of the calf to be seen, a thorough search must be made to find how the calf lies, in the following manner.

First supple the hand and the arm well with warm water, then annoint them with fresh hog's lard, and introduce the hand gently up the cow's shape, and carefully search round about the calf as far as the arm will admit of, so as to be perfectly satisfied of the exact posture the calf may lie, or be forced into, contrary to a natural situation, position or form, which I have before described. See 'natural position'—much danger attending all unnatural extractions, I will therefore endeavour to lay down such methods as will prevent violent means being used, and substitute proper and gentle treatment, with different experiments to be practised in order to effect a safe and speedy extraction, in nearly all the improper postures of a calf lying, as many will be found on examination in several of the unnatural positions hereafter described. Due consideration must be taken, first to move and replace the calf, and put it into a position favourable for extraction.

This may at all times be done best, when the cow is standing upon her legs, and the operator must be sure to get a right knowledge in what manner the calf lies, and adjust the head and legs before any further attempt is made to extract or draw the calf.

Unnatural Position or the Calf Coming the Reverse Way, 1

Suppose a calf present its tail where its head and forefeet ought to be, when it comes in a natural way, with the hind legs quite under its belly, do not make the least attempt to turn it ; Push or press the flat part of the hand to the haunches or hip of the calf, till it be removed back far enough to come at the hocks of its legs, when the calf is removed sufficiently back that the hand may raise up one of the hind feet at a time, by taking hold of the inside of the calf's leg at the hock, and pull at it there, the joint will bend so as the clees or horny part of the foot can be inclosed in the hand; this will prevent the foot from doing any injury to the uterus or the calf bag; such as tearing it or bruising that, or any other part in the cow.

The foot that is so inclosed in the hand is to be brought gently to the entrance of the cow's shape, and a cord be fixed to it, it will be better. Then the person should proceed with the other foot and get it up into the same direction, and by the very same method the first was got up, or placed ready for extraction, when both the feet are brought together at the entrance of the shape in a regular situation, there is nothing more wanted in this case, but pulling quite steadily at the legs of the calf, to give nature the necessary assistance, observing to do it at the time, the cow has her pains or throes upon her.

Caution

It will sometimes happen while the operator is adjusting the calf's legs, etc., and placing them for extracting, the navel string of the calf may break, and from that a large quantity of blood will come rapidly upon the person; this should not be much regarded, as the redundancy will soon stop : this flooding is general with all cows at the time of calving.

The more expeditiously the calf is extracted, when it comes the backward way, the greater probability there is of saving its life : there is some danger of suffocation, when the calf is obliged to be brought from the cow in that way, although it is quite as easy for the cow, as any natural position.

Unnatural Position, 2

Is when a calf presents its two forefeet, and the head does not appear with the feet and legs :—In this case a long arm is very useful. Supple the hand, etc., as before directed, examine gently where the head is, and it will be found mostly doubled back over the hips of the calf, or perhaps it may lie against the ribs of it on the one side or the other, the situation of the head will be at one time nearer, and another farther off just as nature has placed it by the cow's motions.

When the calf's nose lies over its rump, much difficulty will arise in bringing the head into its proper place, which is between the forelegs, that being a position suitable for extraction.

When the nose is not to be come at, the fingers must be got into the calf's mouth and take hold of the jaw bone, and return the head by that means. My method at all times in this case is to keep the arm in the cow to the full extent of it, when the head is so far back till the pains or throes of the cow will enable me to fix the fingers in the nose or against the jaw of the calf : nature will greatly assist in forcing the calf nearer in this operation; if the person will keep his arm in the cow until the head can be completely adjusted. After that is done, the calf may be easily extracted, by pulling at the head and legs, duly waiting for the time when the pains or throes are on the cow.

Position, 3

Is when the calf presents itself sideways or nearly belly upwards, and the head turned back over the one shoulder or the other with the legs appearing. . . . Gently remove the calf back with the hand till you can bring the head forward with the legs into a suitable form fit for extraction, then proceed in the usual way as before-mentioned to bring it from the cow.

Position, 4

In this posture the calf will be dead nine times out of ten, presenting its forefeet and the head quite under its brisket and belly. Push the calf back till the hand can be introduced to the nose. There is a considerable deal of strength and activity required from the exertions of the hand in this operation, to do it well; it chiefly depending on that to bring the head into its proper place, which is to be brought into the same direction as the feet, and placed with them at the entrance of the cow's shape ready for extraction. When the head is so rectified with the legs, the extraction will be done in the usual way, giving a little assistance at the head and legs, at a time when nature requires it.

It is in vain to attempt to bring the calf from the cow, by pulling at the feet in this case, unless the head be first rightly adjusted.

Position, 5

The head will appear alone, or presenting itself and neither hind nor foreleg with it : or perhaps the head and one foreleg only. Push back the calf with the hand against the shoulders or brisket, till room be had to come at the knee or knees of the calf, in this case the feet are generally folded under the calf's belly; the hand must be got gently to the bend of the knee, and you must pull there by degrees that one of the feet may be got forward, so as the clees or horny part of the foot can be enclosed in the hand, which will prevent injuring the cow in bringing each foot to the entrance of the cow's shape, and in the necessary direction fit to be extracted from the cow, by giving the efforts of nature the usual assistance as before described.

Position, 6

The head and one leg appearing, or the head without a leg with it : this may happen either way at different times.

If the head should have appeared a few hours before the cow is discovered to be calving, as many are in that situation, the calf will be destroyed through the cow remaining in that restless state, frequently lying down and getting up in a hasty manner. This is occasioned by the violent agitation of the cow's throes or motions, whereby the head will be greatly bruised and swelled so as to make it too large to go back for the purpose of getting up the legs. The head to be skinned and cut off, if it is swelled, so as to prevent extraction.

Take a sharp knife and make a slit from the poll of the head, beginning between the two ears, and bring the knife down to the end of the nose.

In skinning it, force the skin back over the first joint of the neck, and amputate it there. Then the calf will pull back by pushing at the neck or against the brisket, either of which is most convenient to remove sufficiently to get up the feet, by taking hold at the knees of the calf and bringing them to the entrance of the shape, in the same way as the directions are given in the last position, to place the forefeet proper for extraction. After that, place or wrap the loose skin which is left on the neck carefully over the rough and rugged bony part of the neck, that no injury may be done to the cow, by drawing the calf; some part of the loose skin must be pulled at, all the time another person is assisting at the legs, as the stump end of the neck where the head is taken from does not fix itself against the haunch bone of the cow, which will entirely stop the extracting of the calf, and it must be put back again to release it.

Position, 7

A calf may be found on its back, with its fore and hind legs folded nearly together over its belly, and close up to the cow's back, with the head appearing or perhaps the head will be doubled back even with the ribs, on the one side or the other of the calf; or it may possibly happen in such a position, that one of the hind legs may get to the entrance of the shape; that must be put back, and the forelegs and head brought forward, always be sure to secure the clees of the calf safe in your hand, which will at all times prevent doing any injury to the uterus or calf-bag, whenever it is necessary to put the feet back or bring them forward to the cow's shape.

It is to be understood the calf cannot be extracted with one hind leg and one foreleg coming together: very little judgment is wanted to make that discovery, there being such a difference between the hocks and knees of the calf, as will be easily found out by the person that searches the cow.

All instrumental methods of extraction I wish to avoid as much as possible.

Many people use a hook to return the head of the calf, when lying in the situation I have described in the second position. This hook should be made of tough iron, about four inches long, leaving a crooked point at the one end, and a loop or hole at the other, for the purpose of fixing a cord to it. The hook is to be conveyed to the head of the calf, and the point placed either in the sockets of the calf's eyes, cavity of the ears, or in the mouth, whichever the operator finds most convenient to retain fast hold by: the head will replace by pulling at the cord, and by that means many return the head by this method placed in a position proper for extraction.

I would not recommend this method to be put in practice, but as little as ever the operator can help.

My common practice is to keep the arm in the cow as before-mentioned—see 'the second position'—till I can get hold of the calf's nose or jaw, which I have there directed to be done. Great danger attends using the hook, should it be moved out of the place it is fixed, as the cow's motions may get it out of its proper place, let whatever care will be taken, and the cow may receive such injury, as will ruin and destroy her, should it catch and tear the uterus or calf-bag, or inwardly bruise any other part of the passage. It is impossible at all times to rely upon its keeping safe where it is intended to remain, while the head be returned into a right direction.

If the calf be dropsical, it will be known from the largeness thereof: and when the extraction cannot be made in the usual way, from the calf containing a large quantity of water, a knife should be cautiously used as follows, by piercing it into the entrail part of the belly of the calf; this will let out the water; when a dropsical calf comes the backward way, it will be safely and easily done, as the abdomen or lower part of the belly will be readily come at by guiding the knife up between the calf's hind legs.

A description of several other positions might be added, but these being the most common within my practice, I trust that great utility may be gained from these plain instructions, by every one that wishes to be informed how to perform such operations. FINIS.

In modern obstetric experience, the ventral positions Nos. 3 and 7, and the breast-head posture of position 4 would not be considered the common malpositions that Downing claimed. At the risk of reading too much into his ideas on the relative incidence of dystocias it could be that Downing was more frequently presented with cases complicated by lay interference; ones that had already defied farmer and horse.

Apart from this, Downing's observations make remarkably realistic reading today. His account of a cow, her pelvis impacted with a swollen-headed foetus in bilateral shoulder flexion, is a particularly fine description. This and the attention he gave to detailed, eminently sound instructions, mark the author as a man with a considerable practical experience in bovine obstetrics.

Biobibliography

In view of this it is very unfortunate that nothing is known of the author. In the Preface he signed himself as Joseph Downing of Fairfield near Bromsgrove but all efforts to reveal further information have drawn blank with the possible exception of one clue.

In 1828 there was a Downing, Christian name unknown, who was a surgeon in Stourbridge (Pigot, 1828). He is recorded (Anon., 1912), not for meritorious services rendered but for having been discovered one March night in 1813 while cutting down the body of William Howe, hanged for the murder of farmer Robins. Disturbed in the act, Downing had dropped from the gibbet to hide on the ground below. There he was struck by the corpse, its suspension proving inadequate.

This was before the supply of bodies for medical education was legalised by the Anatomy Act of 1832 so it may have been that Downing the Stourbridge surgeon, was anxious to have the body for dissection. Such a keen investigator could conceivably have written The Instructions for the Extracting of Calves.

Certainly, the two earliest published lists of veterinary surgeons do not include a Downing among the names (White, 1801; Anon., 1835) so if, in fact, the surgeon were the author it might serve to explain the sharp contrast between the Appendix of Instructions and the worthless main section of the book. He may possibly have had a particular interest in bovine obstetrics and was unable to write on boviatrics in general but for commercial expediency had to combine the Instructions with a text in the popular style of the day; a polypharmacy of nostrums.

Support for this theory lies in the fact that some copies of the Instructions had a distinct title page

for separate sale in pamphlet form (Smith, 1924) although no surviving specimens are known.

The first edition of the book was that bearing a Stourbridge imprint and dated 1797. It was quite successful as the whereabouts of nine existing copies are known after only a cursory search. There were at least two issues, the details of which are included in Table I.

whose name appeared over a Bangor imprint dated 1812. There was nothing unusual in this as it was a common practice of the age. What is so strange is Smith's assessment of Rowlands (Smith, 1930): "There is nothing to learn about diseases from this book, which in several respects belongs to the eighteenth century. It is otherwise in dealing with obstetrics, for on this subject he writes clearly and

TABLE I

BIBLIOGRAPHICAL DETAILS

1st Edition 1st Issue	1st Edition 2nd Issue	2nd Edition	Plagiarism
Title : A / TREATISE / ON THE / *DISORDERS*, / INCIDENT TO / HORNED CATTLE, / COMPRISING / A DESCRIPTION OF THEIR SYMPTOMS, / AND THE MOST RATIONAL METHODS OF CURE. FOUNDED ON / LONG EXPERIENCE: /[rule] BY J. DOWNING. / [rule] TO WHICH ARE ADDED / RECEIPTS, / FOR CURING THE GRIPES, STAGGERS, AND WORMS / IN HORSES, / AND / AN APPENDIX, / CONTAINING INSTRUCTIONS FOR / *THE EXTRACTING OF CALVES* / [rule] STOURBRIDGE: *Printed and sold by J. Rollason,* / SOLD ALSO BY T. N. LONGMAN, PATERNOSTER-ROW, LONDON; / T. PEARSON, BIRMINGHAM; N. ROLLASON / COVENTRY. / 1797.	*Title :* A / TREATISE / ON THE / *DISORDERS* / INCIDENT TO / HORNED CATTLE, / COMPRISING A / *Description of their Symptoms,* / AND THE / MOST RATIONAL METHODS OF CURE. / FOUNDED ON LONG EXPERIENCE. / [rule] *BY J. DOWNING.* / [rule] / TO WHICH ARE ADDED, / *RECEIPTS* / FOR CURING THE / GRIPES, STAGGERS, AND WORMS / IN / HORSES; / AND / AN APPENDIX, / CONTAINING INSTRUCTIONS FOR THE / EXTRACTING OF CALVES. / [rule] / *Printed and Sold at Stourbridge.* / SOLD ALSO BY / T. HURST, Messrs. LONGMAN and REES, *Paternoster-Row;* / and Messrs. RIVINGTON, *St. Paul's Church-Yard,* / LONDON. / [rule] / 1797.	*Title :* A / TREATISE / ON THE / DISORDERS / INCIDENT TO / HORNED CATTLE, / COMPRISING A / *Description of their Symptoms,* / AND THE / MOST RATIONAL METHODS OF CURE. / FOUNDED ON LONG EXPERIENCE. / [rule] / *By J. Downing.* [rule] / TO WHICH ARE ADDED, / RECEIPTS / FOR CURING THE / *GRIPES, STAGGERS & WORMS* / IN / HORSES; / AND / *AN APPENDIX,* / CONTAINING INSTRUCTIONS FOR THE / EXTRACTING OF CALVES. / [rule] / *Kidderminster : printed and sold by G. GOWER,* / Sold also by / Messrs. LONGMAN, HURST, REES, and ORME, / LONDON.	*Title :* A TREATISE / ON THE / DISORDERS / INCIDENT TO / HORNED CATTLE; / COMPRISING, / DESCRIPTION OF THEIR SYMPTOMS, / *And the most rational methods of Cure* / FOUNDED ON LONG EXPERIENCE. / [rule] / BY THOMAS ROWLANDS. / [rule] / TO WHICH ARE ADDED, / *Receipts for Curing the most common Disor/-ders in Horses;* / AND / AN APPENDIX. / CONTAINING INSTRUCTIONS FOR THE / *EXTRACTING OF CALVES.* / [rule] / BANGOR: / PRINTED BY JOHN BROSTER. / [rule] / 1812.
Collation : 8vo; [ ]^{8}, B - I^{8}, K^{2}, L^{8}	*Collation :* 8vo: []^{2}, []^{4}, B-G^{8}, H^{7}, I^{8}, K^{2}, L^{8}, []^{1}	*Collation :* 8vo; [ ]^{2}, B - S^{4}, [ ]^{2}	*Collation :* 8vo; [ ]^{5}, A - M^{4}, N^{2}
Copy : Royal College Veterinary Surgeons.	*Copy :* I. S. A. Hall: 2. Birmingham Ref. Library.	*Copy :* S. A. Hall.	*Copy :* S. A. Hall.
NOTE: Half-title and title pages are of the same paper as used for the text. Sig. H^{8} is a full title page to the Appendix.	NOTE: Half-title and title pages are of different paper from that used for the text. There is no full title to the Appendix.		

There was also a second edition which now seems to be a very rare book; apart from that in the British Museum only one other copy has so far been located and Smith (1924) does not mention its existence. There were no changes in the text but the title page had a Kidderminster imprint. It was undated and evidence on this point is confusing. The title page imprint, "Longman, Hurst, Rees and Orme" was in use between 1804 and 1811 which tallies with an entry in the English Catalogue Of Books listing a "new edition 8vo" published in August 1807. However, the copy examined has a front board with an imprint that differs slightly from that on the title page, "Longman, Hurst, Rees, Orme and Brown". This was in use from 1811 to 1823. It is therefore assumed that there was a *post* 1811 re-issue which used the sheets of the 1807 printing. The British Museum copy of the Kidderminster edition has not been examined. The Catalogue places it as *circa* 1820 which, if correct, probably means that it too is a re-issue.

The third form in which the work appeared had no connexion with Downing. It was a verbatim plagiarism claimed as the work of Thomas Rowlands with humanity. His methods are never violent, and he avoids as far as possible all instrumental methods of extraction. He was essentially an obstetrician."

Smith, usually so astute at spotting plagiarists, has completely failed to see Rowlands in that guise.

Acknowledgments.—I am grateful to the many librarians and others who have searched records on my behalf; to Mr. D. A. Gray and Mrs. E. Stebbings of the Central Veterinary Laboratory Library for bibliograhpical assistance, and to Mr. F. T. Brown for the photograph.

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Prophylaxis Against Trypanosomiasis in Zebu Cattle

II.—The Duration of Prophylaxis Conferred by Preparations of Prothidium Compared with Antrycide Prosalt

BY

JOHN ROBSON,

Veterinary Research Laboratory, Mpwapwa, Tanganyika

SUMMARY.—The durations of prophylaxis in Zebu bulls or bullocks treated with a single dose of Prothidium bromide powder, Prothidium bromide tablets, or Prothidum glucoside were compared with that conferred by Antrycide Prosalt R.F. in an area of heavy trypanosome risk (*G.* morsitans *A. D.* 73 *to* 185; *I. R.* 10.32 *per cent.*) *Untreated controls were introduced at intervals.*

Under these conditions Prothidium bromide powder and tablets at 4.0 *mg. per kg. gave the longest prophylactic effect. Prothidium bromide powder at* 2.0 *mg. per kg. gave less protection than when used at* 4.0 *mg. per kg. Prothidium glucoside at* 4.0 *mg. per kg. and Antrycide Prosalt R.F. at* 7.4 *mg. per kg. both gave poor protection.*

No systemic reactions were noted but a high proportion of rupturing of the site of injection occurred in animals treated with Prothidium.

Twenty untreated bullocks introduced at intervals all became infected in 14 *to* 34 *days and* 14 *died of trypanosomiasis. The others being treated and removed.*

Introduction

RECENT trials using Prothidium* have been reported by Robson and Cawdery (1958), Robson (1958), Smith (1959), Lyttle (1960), and Smith and Brown (1960), and all reported prophylactic activity. But in the manufacturing of Prothidium bromide tablets, it was found that Prothidium combined with the base to form a glucoside and this glucoside was found to be less active prophylactically than the bromide (Brownlie, 1959).

The object of the experiment was to determine the duration of prophylaxis conferred on cattle by various preparations of Prothidium, including the glucoside, compared with Antrycide Prosalt R.F.† in an area of known heavy trypanosome risk.

Materials and Method

(a) *Cattle*

Immature Tanganyika bulls and bullocks were purchased from an area where no tsetse exists and moved to a holding ground, also tsetse free, where they were held for a period of three months prior to the inoculation with drugs and for one week after treatment. During this period none of the animals developed trypanosomiasis. The weights of the cattle were estimated just before the iniections were carried out and they varied from 250 lb. to 450 lb., the average being 348 lb.

All were grazed as one herd and kept at night in an enclosure of bush poles in the tsetse area. No dipping or spraying took place throughout the entire experiment.

(b) *Drugs*

Three preparations of Prothidium were used—Prothidium bromide powder, Prothidium bromide tablets, and Prothidium glucoside.

All solutions of Prothidium were prepared on the site immediately prior to inoculation as 5 per cent. solutions in sterile distilled water. Antrycide Prosalt R.F., was prepared according to the manufacturer's recommendations, and was used as a standard drug. This is a formulation containing 3 parts quinapyramine sulphate to 2 parts quinapyramine chloride.

The dosage of the Prothidium preparations was based on the actual amount of Prothidium in the preparation, *e.g.* 2.1 gm. Prothidium glucoside was equivalent to 1.0 gm. Prothidium bromide.

All drugs were inoculated subcutaneously into the dewlap just anterior to the sternum.

(c) *Locality*

The experiment was carried out in tsetse infested bush east of the boundary of Kingolwira Prison Farm, Morogoro, Tanganyika, in an area where no drug trials had previously been carried out.

(d) *Design*

The cattle were ear-tagged with numbered ear tags in each ear and randomised as shown in Table I.

TABLE I
SHOWING THE DESIGN OF THE EXPERIMENT

Drug	Dose mg. per kg.	No. of animals in group
Prothidium bromide powder	2.0	10
Prothidium bromide powder	4.0	13
Prothidium bromide tablets	4.0	15
Prothidium glucoside	4.0	12
Antrycide Prosalt R.F.	7.4	15

Six untreated control cattle were introduced into the area 2 months prior to the introduction of the treated cattle, 9 more with the treated cattle, a third group of 6 at day 107 after entry to exposure and a fourth group of 5 at day 184.

* Boots Pure Drug Co. Ltd.
† Imperial Chemical Industries (Pharmaceuticals Division).

(c) *Trypanosome risk*

The area was heavily infested with tsetse, mainly *Glossina morsitans orientalis* but with a few *G. brevipalpis*. The Apparent Density (A.D.) (defined later) was determined by flyboys on a fly-round and the infection rate was found by dissection of samples of tsetse.

(f) *Blood examination*

Thick blood smears were taken on 2 consecutive days twice a week between 7 a.m. and 8.30 a.m. until day 108 after exposure, when slides were taken on 3 consecutive days each week. The slides were examined, after being stained with Giemsa, and at least 200 oil immersion fields of each smear were examined.

Results

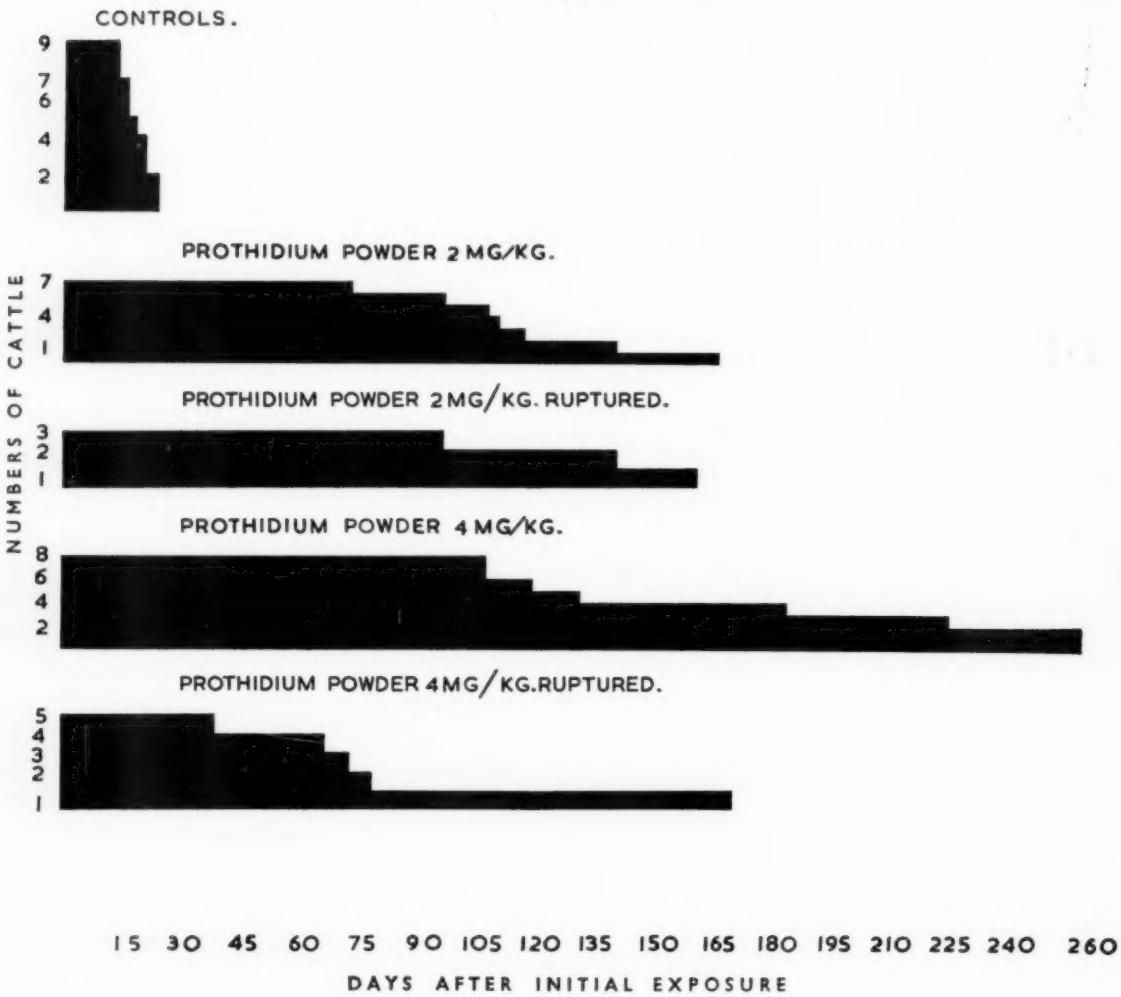
In the results the period of prophylaxis conferred on animals in which the inoculation site ruptured will be given separately to those where no rupturing of the inoculation site occurred.

No extraneous disease occurred and no deaths occurred in any of the treated groups after entry to exposure. On the way from the train to the exposure area a lorry ran into the mob of cattle and 2 in the Prothidium bromide powder group and 3 in the Prothidium glucoside group were either killed or had to be destroyed, hence the uneven numbers of animals in the groups.

(a) *Controls*

The 6 untreated animals introduced into the area prior to the main experiment all became infected in periods varying from 11 to 27 days. They all died of trypanosomiasis. The period from introduction to death varying from 26 days to 152 days. Both

FIG. 1.—Showing the protection conferred on cattle by a single inoculation of drugs.



Trypanosoma congolense and *T. vivax* were found to be present in the area.

The 9 untreated controls introduced with the treated groups became infected in periods varying from 14 to 24 days and all died from trypanosomiasis in a period of 58 to 75 days after exposure to tsetse.

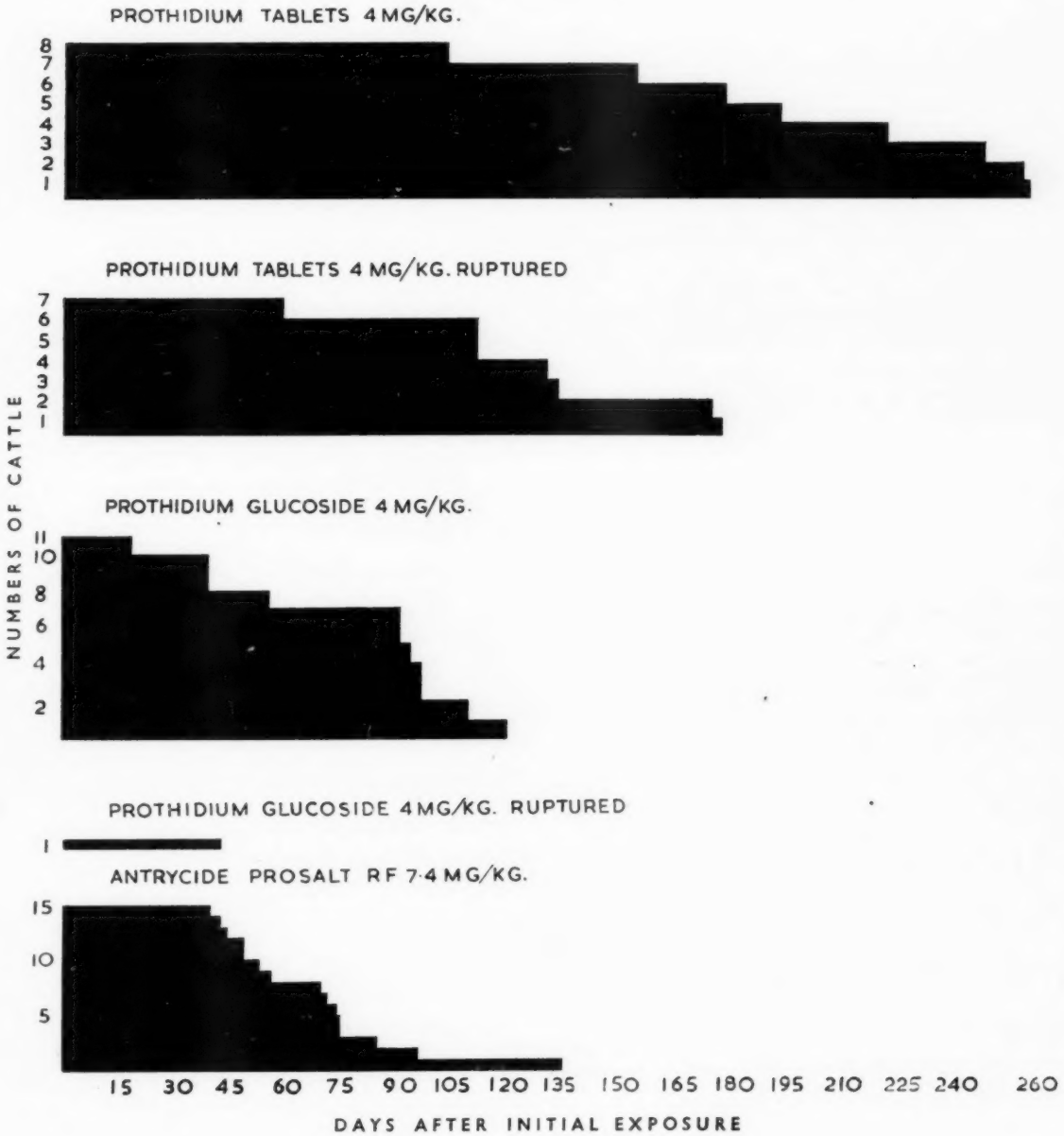
Of the third group of 6 controls introduced on day 107, all became infected in periods varying from 14 to 34 days and 5 died of trypanosomiasis in a period of 44 to 72 days after exposure, the remaining one was treated and removed in order to save its life.

The 5 untreated cattle introduced on day 184 all became infected with trypanosomiasis between 16 and 23 days after exposure to tsetse. They were treated and removed.

(b) *Prothidium bromide powder 2 mg. per kg.* 10 *animals*

In 3 animals the site of inoculation ruptured and

FIG. 1.—Continued


PROTHIDIUM TABLETS 4 MG/KG.
PROTHIDIUM TABLETS 4 MG/KG. RUPTURED
PROTHIDIUM GLUCOSIDE 4 MG/KG.
PROTHIDIUM GLUCOSIDE 4 MG/KG. RUPTURED
ANTRYCIDE PROSALT RF 7·4 MG/KG.
NUMBERS OF CATTLE
15 30 45 60 75 90 105 120 135 150 165 180 195 210 225 240 260
DAYS AFTER INITIAL EXPOSURE

the first of these became positive on day 97, the second on day 141 and the third on day 162.

Of the 7 which did not show rupture of the inoculation site, the first became positive on day 73 and all the remainder were positive by day 167.

Fig. 1 shows the period of protection conferred by the drugs.

(c) *Prothidium bromide powder* 4 *mg. per kg.* 13 *animals*

The inoculation sites in 8 animals did not rupture and the first break-through in these occurred on day 108. Five others became positive and 2 remained negative when the experiment was discontinued on day 262.

Five animals showed ruptured inoculation sites and the first of these showed positive slides on day 39, all the remainder becoming positive by day 171.

(d) *Prothidium bromide tablets* 4 *mg. per kg.* 15 *animals*

Eight cattle did not show rupture of the inoculation site and the first of these broke through on day 101. Six more showed positive slides and one remained negative throughout the duration of the experiment.

Of those showing ruptured inoculation sites, one became positive on day 60, and all the remainder were positive by day 177.

(e) *Prothidium glucoside* 4 *mg. per kg.* 12 *animals*

The inoculation sites of 11 cattle remained unruptured and the first of these showed a positive slide on day 18, all the remainder becoming positive by day 118.

The one animal whose inoculation site ruptured became positive on day 42.

(f) *Antrycide Prosalt R.F.* 7.4 *mg. per kg.* 15 *animals*

No rupturing of the inoculation site occurred. The first break-through occurred on day 39 and all 15 were positive by day 134.

Reaction to Inoculation

(a) *Systemic.* No systemic reactions were noticed in any of the treated animals.

(b) *Local.* The local reactions observed in the Prothidium groups followed those described by Robson and Cawdery (1958) except that in this experiment more rupturing of the inoculation sites occurred—healing subsequently took place leaving the skin puckered. The swelling of some of those sites which ruptured reached a size of 18 inches long by a height of 9 inches before rupturing occurred.

Treatment of Infected Animals

As soon as infected animals had shown two positive slides, they were treated with Berenil* at 3.5 mg. per kg. and removed from the herd. No break-throughs were noticed in those thus treated but they were only observed for a minimum period of 30 days.

* Farbwerke Hoechst Ag.

Trypanosome Risk

Trypanosome risk as defined by the "Expert Conference on Drug resistance in trypanosomiasis" held at Tororo, Uganda, in March, 1960, is "the degree to which a host is exposed to being infected in nature," and this, in this experiment, has been measured by the infection rate of control animals, the Apparent Density and infection rate of *G. morsitans* in the exposure area.

The results of the infection of the control animals has already been described.

The Apparent Density was measured by three fly boys on a fly-round in the exposure area and the figures given in Table II are the monthly averages for the period of exposure. The fly-round was traversed 2 or 3 times per month. (The Apparent Density in the context means the number of non-teneral males per 10,000 yards of fly-round.)

TABLE II

SHOWING THE A.D. AND INFECTION RATE (I.R.) OF *G. morsitans* CAUGHT IN THE EXPOSURE AREA OVER THE PERIOD OF THE EXPERIMENT

Month	Days after exposure	A.D.	I.R. per cent
Feb. '60	1 – 17	108	3.7
March	18 – 48	110	8.8
April	49 – 78	124	9.3
May	79 – 109	185	13.2
June	110 – 139	122	10.5
July	140 – 170	118	14.2
August	171 – 201	101	9.6
Sept.	202 – 231	73	12.0
Oct.	232 – 262	76	12.2

Prior to the introduction of cattle into the area 721 male *G. morsitans* were dissected giving the following results:—

Proboscis alone infected 6; Proboscis + gut infected 33; gut only infected 19; giving an infection rate of mature infections of 5.40 per cent.

Six untreated control animals were introduced into the area and a further 1,535 male *G. morsitans* were dissected with the following results:—

Proboscis alone infected 29; Proboscis + gut infected 63; gut only infected 50: an infection rate of 5.86 per cent.

After the introduction of the treated herd until the completion of the experiment on day 262, 2,059 further dissections took place with the results as under:—

Proboscis alone infected 88; Proboscis + gut infected 125; gut only infected 96; giving a mature infection rate of 10.32 per cent.

Blood squashes from fed tsetse were collected for analysis and these will be reported in a separate communication.

Discussion

In the face of the very heavy trypanosome risk, a minimum protection period of over 100 days conferred by Prothidium bromide powder at 4 mg. per kg. in those cattle whose inoculation site did not rupture was considered satisfactory, especially when compared with the protection given by the standard—

Antrycide Prosalt, *i.e.* 39 days. This result is similar to that obtained by Robson and Cawdery (1958) where Prothidium bromide powder at 4 mg. per kg. gave a first break-through at 110 days in a comparable risk though involving a different tsetse.

The experiment shows quite clearly that Prothidium glucoside has a very much reduced prophylactic action but the tablets supplied for this experiment do not show a reduction in prophylactic activity when compared to the powder, thus showing that these tablets may not contain an excessive quantity of glucoside.

The very high proportion of ruptured inoculation sites can probably be accounted for by the use of a 5 per cent. solution but Smith and Brown (1960) used 4 per cent. solution without any rupture of inoculation site. When the recommended strength of 2 per cent. is used, although local reaction may be considerable, it is unusual for rupturing of the site to occur.

The reason why the period of protection in the animals in the Prothidium bromide powder 4.0 mg. per kg. group where the inoculation site ruptured was short, compared to those of the 2.0 mg. per kg. group, is probably explained by the fact that those in the 4.0 mg. per kg. group ruptured early due to the size of the inoculum and discharged a lot of drug whereas those in the 2.0 mg. per kg. group ruptured later, when there was little drug left to discharge.

Smith and Brown (1960) postulate 5 points which may be greatly relevant when the results of comparative drug trials are conducted in a natural challenge, and an endeavour to overcome some of these was made. Their first point of drug resistant trypanosomes being present in the area before the experiment began was overcome by using an experimental area where no cattle were and thus no drugs had ever been used. The second of cross-resistance was partially overcome by using only one type of drug *viz.* Prothidium and one standard—Antrycide Prosalt. Their 3 other points, namely, avoiding the possibility of trypanosomes being picked up by the vectors from the experimental cattle, the alteration of risk by removal of those cattle which have become positive and finally the immunological responses are very difficult to overcome or even assess. The final point of immunological responses seems to have played a certain part in this experiment because otherwise it is very difficult to explain why one animal should break down at 100 days and similar animals are still protected at 260 days in an increasing risk due to the removal of infected animals, and increase in infection rate.

Acknowledgments.—I wish to thank Messrs. Boots Pure Drug Co. Ltd. for giving the money to purchase the cattle and for supplying the preparations of Prothidium free of charge.

The technical assistance of Messrs. E. Gorton, A.I.M.I.L.T., A. Hussein, and H. Jonathan is gratefully acknowledged.

The Commissioner of Prisons, Tanganyika, and his staff are thanked for the facilities and housing provided, and Mr. J. E. R. Roe, Commissioner for Veterinary Services, is thanked for the opportunity to carry out the trial and permission to publish the results.

(*Concluded at foot of adjoining column*)

Prophylaxis Against Trypanosomiasis in Zebu Cattle.—*Concluded.*

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Sulphaquinoxoline Toxicity in Day-old Chicks

BY

OLAF SWARBRICK

Arundel

SUMMARY.—A serious mortality rate in day-old chicks associated with the unnecessary use of sulphaquinoxoline is described.

Subject and History

TWO hundred chicks of a hybrid egg laying strain were purchased as day-old chicks and immediately divided into 2 batches which were placed in tier brooders with wire floors. They were fed a proprietary dry mash containing a coccidiostat. Sulphaquinoxoline was added to the drinking water immediately from the time of arrival. This was added at the maker's recommended strength so that the final dilution was 0.04 per cent., although the mixing of the dilution was haphazard and the final concentration may have been higher. The stock solution had been on the premises for 2 years. Deaths commenced after 2 days, and when the writer examined the birds 4 days after arrival about 35 birds had already died.

Clinical Examination

The remaining chicks were sleepy, listless and did not appear to be feeding as well as they should. A few birds were observed to be *in extremis*—lying on their sides and waving their legs and wings idly in the air. No evidence of diarrhoea was seen at the time of the examination, although the owner said that some chicks had been scouring.

Post-mortem Examination

Twenty chicks were examined. The livers were of the normal bright yellow colour found in very young chicks, and the intestines of most birds contained reasonable quantities of food material. Some evidence of scouring was found in a few carcases which had soiled vents and diarrhoeic intestinal contents. On 4 birds small haemorrhages were found on the musculature of the legs. Most of these haemorrhages were very small, and appeared to run along the length of the blood vessels. Two birds had extensive haemorrhages in the subcutaneous

tissues over both stifle joints. Some birds had congested and swollen kidneys, although the kidneys of others were abnormally pale. In 2 birds the ureters were distended with a white deposit which stood out plainly against the kidney tissue. Most birds showed excessive pericardial fluid, but no other evidence of oedema was seen.

A tentative diagnosis of sulphaquinoxoline poisoning was made, and a rather guarded prognosis given.

Twelve of the remaining dead birds were despatched for laboratory examination, and the rest of the birds were treated empirically by adding 1 mg. of vitamin K per bird to the dry mash in the feeding troughs. This was done by grinding up vitamin K tablets and mixing them with about 1½ days supply of chick mash. The medicated water was immediately withdrawn. Seventeen birds died that night, after which deaths ceased and the remaining birds rapidly improved in both appetite and general appearance. Laboratory examination failed to demonstrate bacteriological or other evidence of any specific disease. Most of the specimens sent to the laboratory had very little food in the alimentary canal, and haemorrhages were not present in this sample of birds.

Discussion

Field cases of toxicity due to sulphaquinoxoline in birds of this age do not seem to have been previously reported, probably because there are no indications for its use in such young chicks. Most of the studies on sulphaquinoxoline toxicity have been done with much older birds. Davies and Kendall (1953) studied the toxicity of sulphaquinoxoline using chicks between 1 and 4 months of age. They describe symptoms associated with loss of appetite, flaccid swollen crops, generalised oedema and occasional diarrhoea. Delaplane and Milliff (1948) describe grey white nodules in the lungs and the liver and pelvic haemorrhages in the kidneys, nodular lesions in the heart and haemorrhages under the skin. More rarely haemorrhages are seen in other parts of the body, notably in the liver and pectoral muscles. In acute cases oedema was present in the body cavity. Meyer Jones (1954a) quotes the above 2 workers and also comments on the toxicity of sulphonamides in general and sulphaquinoxoline in particular; a level of 0.1 per cent. can be given for a few days in the food without interference with growth rate or other toxic manifestations, although after 30 days it causes depression of growth rates. A level of 0.2 per cent. causes toxicity after a few days, and serious depression of growth. All the quoted workers consider that sulphaquinoxoline given in the mash is considerably less toxic than when given in the drinking water, and there is a concensus of opinion that young birds are less severely affected than older ones. Meyer Jones (1954b) also describes acute renal blockage due to deposits of sulphonamide crystals in the urinary tubules, renal pelvis and ureters; his remarks, however, appear to apply mainly to mammals.

(Concluded at foot of adjoining column)

Rectal Temperatures in New-born Normal Puppies

BY

GEORGE W. CRIGHTON
Stafford

SUMMARY.—Although the neonate mammal is known to have poor thermal regulation, there has been little interest shown in rectal temperatures of normal new-born puppies.

A small survey suggests strongly that such puppies may exist in a state of moderate hypothermia during the first week of life without distress and that the normal rectal temperature of the new-born may be in the region of 96° to 97° F. rising over the first 7 days to approximately 100° F. A rectal temperature below 90° F., once the puppy is dried, is associated with lack of vigour.

Attention is drawn to the potentially serious nature of undiagnosed hypothermia in the new-born human infant.

BODY temperatures of the domesticated animals are relatively stable and the rectal temperature of the dog is regarded as lying between 100.2°

Sulphaquinoxoline Toxicity in Day-old Chicks.—*Concluded.*

A loss of 53 birds representing over 25 per cent. of the batch during the first 5 days is obviously an unusual and serious mortality rate. Failure of the laboratory to find evidence of any other disorder tends to support the original clinical diagnosis It is unfortunate that the sample of birds sent to the laboratory failed to show evidence of the subcutaneous haemorrhages or pericardial oedema seen on the farm. This does underline the importance of examining as many birds as possible and not being satisfied with small numbers. The rapid recovery of the remaining birds, after the withdrawal of sulphaquinoxoline, would also tend to support the original diagnosis.

The owner of these birds acted entirely on his own initiative in adding this drug to the bird's water supply, and did so in complete ignorance of what he was doing. He revealed no knowledge of coccidiosis, its therapy or prophylaxis, and had no idea the mash he was feeding contained a coccidiostat or that sulphaquinoxoline was potentially toxic.

Acknowledgments.—It is a pleasure to acknowledge the help of the Poultry Diagnostic Department of the Central Veterinary Laboratory, Ministry of Agriculture, for the laboratory examinations.

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and 103.8° F., and averaging 102° F. (Dukes, 1947). New-born mammals are much less resistant to cold than adults and their body temperatures are less stable (Houssay, 1955), but it is widely accepted that a puppy has a temperature higher than that of the full-grown dog. However, it appears that rectal temperatures of new-born puppies have not been reported in the literature and few workers regularly record rectal temperatures in unweaned puppies. The possible significance of temperatures in clinical examinations of those animals has prompted a survey in this practice in an effort to determine the probable rectal temperatures of apparently normal puppies during the first week of life.

The term "normal puppy" is rather difficult to define since signs of health in the new-born are not so numerous as those in later life. At the 7th day puppies should be vigorous, active, feeding well, and obviously thriving and gaining weight rapidly. They should show some measure of independence by lying away from the dam between feeds and should no longer object to sleeping alone away from other members of the litter. At birth, however, these puppies are utterly dependent on the mother and have to be in actual contact with her body. Apart from assessing the condition of a given puppy by visual inspection and handling, 3 simple tests are employed before a puppy is classed as normal. These are tests of behaviour and have proved a sound guide. A puppy is gently moved away from the mother to another part of the nest. This provokes a "flight reaction" and, after some initial concern, the puppy returns without hesitation to the mother to lie once more in actual contact with her. When a bitch is suddenly lifted away from her litter during the first day or so this creates an immediate "maggot reaction" amongst the litter and all the puppies show great agitation as they group themselves into a bundle. Again, if a normal puppy is held firmly in warm hands it relaxes quite quickly, but if it is then laid upside-down on the upturned palm of the hand and some friction is applied to its trunk, it cries out loudly with long, high-pitched cries and wriggles and squirms, flexing the trunk from side to side and flailing with its limbs. There is no hint of "slow motion." If a puppy reveals no congenital or other defects and appears to be otherwise sound when examined in the immediate *post-partum* dry state, then it may be considered normal if it demonstrates good "flight" and "maggot" reactions, and shows no sign at all of "slow motion." For the purposes of this survey "normal" was also taken

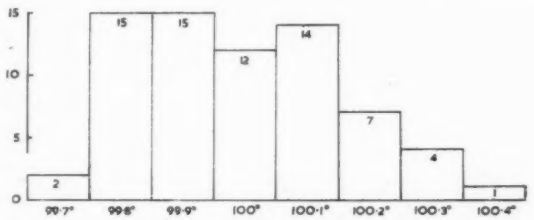


FIG. 1.—Showing the distribution of rectal temperatures in 70 normal puppies.

to include the clinical condition, maternal instincts, and milk supply of the mother and also the fact that the puppy was being reared under a well-accepted system of management.

The first series of examinations was of puppies at the 7th day of life. The rectal temperatures of the dams were taken before and after the puppies were examined. Since it is not always possible to pass the bulb of a clinical thermometer much more than 3 to 4 cm. into the rectum of a puppy, the second examination of the bitch was carried out by inserting the bulb of the thermometer into the rectum just far enough for it to lie against the rectal mucosa. The first and second readings were found to be relatively consistent.

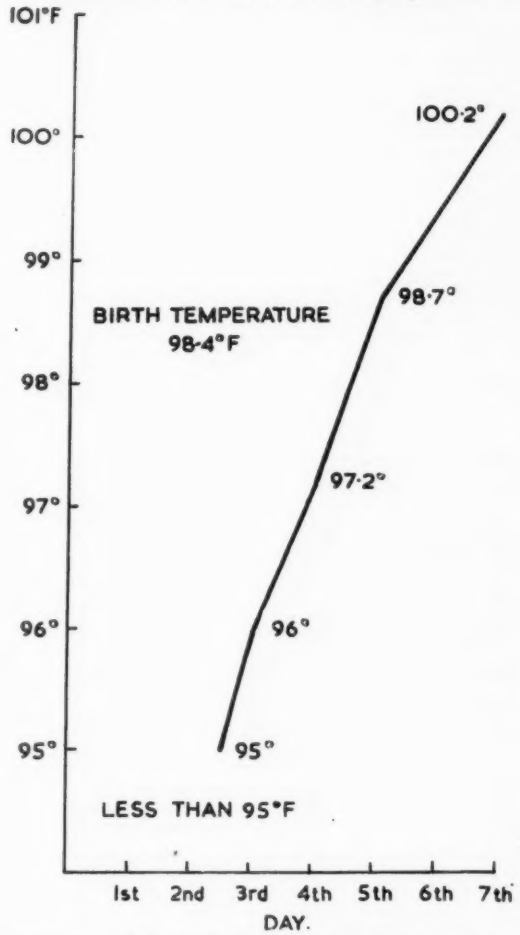
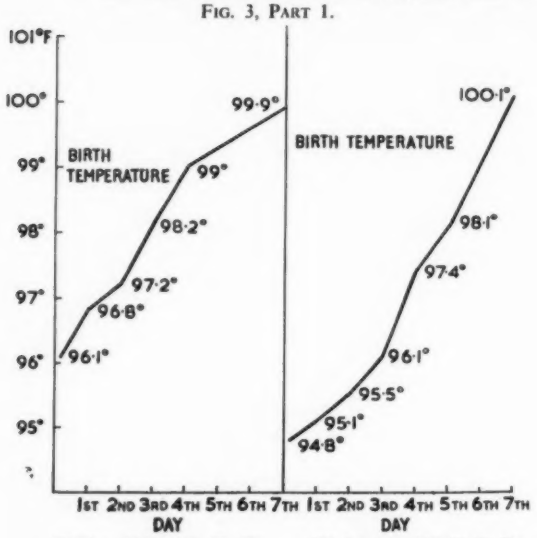


FIG. 2.—Typical graph of rectal temperatures during the first week of life using a standard clinical thermometer.

In 70 normal puppies from 14 litters rectal temperatures around noon on the 7th day of life lay between 99.7° and 100.4° F. (Fig. 1). In all cases rectal temperatures of the mothers were within normal range. From this it seems reasonable to suspect that a normal puppy at the 7th day of life

Rectal temperatures of normal puppies from the dry state to the 7th day in different environments.

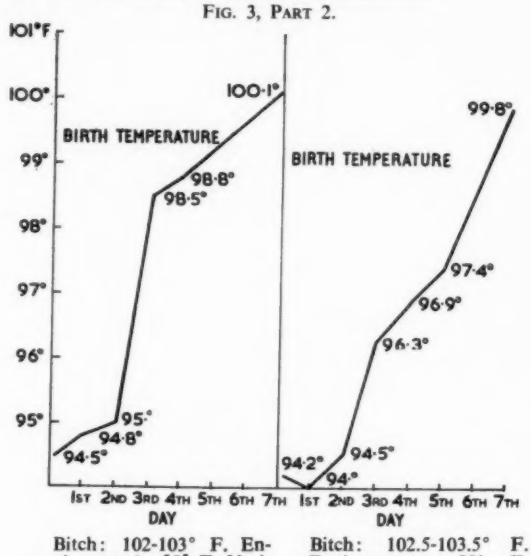
FIG. 3, PART 1.



Bitch: 102-103° F. Environment: 70° F. Variation: Slight.

Bitch: 102-102.5° F. Environment: 65° F. Variation: Slight.

FIG. 3, PART 2.



Bitch: 102-103° F. Environment: 55° F. Variation: Less than 10 degrees daily.

Bitch: 102.5-103.5° F. Environment: 55° F. Variation: Over 10 degrees daily.

has a rectal temperature slightly subnormal, and certainly lower than popularly assumed.

In a second series, 7 litters were examined daily from birth to the 7th day using a standard clinical thermometer (Fig. 2). Such a thermometer has a limited value during the first 2 days and may fail to give a reading, but later in the week rectal temperatures rise and can then be recorded.

In a further series, low reading clinical thermometers were introduced and 8 litters ranging from 1 member to 11 members were examined. Rectal temperatures were recorded whenever possible at the moment of birth and again as soon as the puppy was completely dry and lying quiet and comfortable in contact with the dam; thereafter daily between 11 a.m. and 1 p.m. till the 4th or 5th day, and finally on the 7th day. Rectal temperatures of the bitches were recorded daily and a note was made of the air temperature in the nest and the approximate daily variation in this temperature. Temperature graphs are shown in Fig. 3. There is a dramatic fall in body temperature during the drying out period immediately after birth. This fall is very variable and in this series was not recorded for, once the puppy is dry and comfortable, this initial drop is quickly reversed. A dry, warm, active new-born puppy is found to be hypothermic. If the nest is warm day and night during the week then this hypothermia may be less marked than amongst puppies born in a nest where air temperatures do not exceed 60° F. and vary frequently, but it still occurs. Birth temperatures are not regained for some days, and body temperatures tend to rise a little each day if the examinations are carried out at 24-hour intervals. From this it would appear that the new-born puppy may exist in a state of apparent hypothermia without distress.

A true warm-blooded (homoiothermic) mammal has a given range of environmental temperatures in which, at rest, it is neither cooled nor warmed by its environment. In this Comfort Zone the thermal regulating mechanisms are virtually inactive (Best & Taylor, 1958). Within this zone there exists a Critical Temperature where the warm-blooded animal is in complete thermal balance when relaxed. In most mammals this temperature lies between 82.4 and 86° F. (Houssay, 1955).

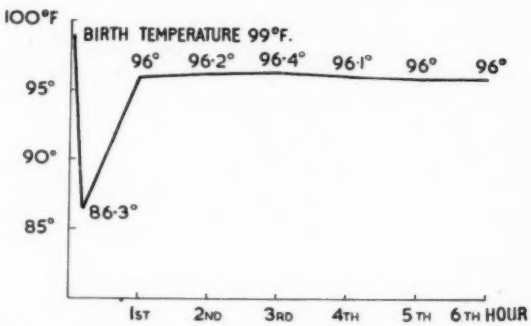


FIG. 4.—Temperature graph of a puppy incubated at 84-86° F. 15 minutes after birth.

Five puppies from different litters were examined at birth and birth temperatures were recorded. Each was returned to the dam till it was nearly dry and the rectal temperature was again taken. Each was then dried thoroughly with a towel and transferred to an incubator at approximately 84° to 86° F.

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R.C.V.S. Day

R.C.V.S. Day for 1961 was held in Edinburgh on June 7th beginning with the Corporate Service and Commemoration of Benefactors. The service was held in the High Kirk of Edinburgh, St. Giles Cathedral, and was conducted by the Rev. James Blackie, S.T.M., B.D., Chaplain to the University of Edinburgh. Prayers for the body corporate of the Royal College were offered by the Very Reverend D. B. Porter, M.A., Dean of the Episcopal Church in Edinburgh, and the Lesson was read by the President, Sir John Ritchie, C.B. The sermon was preached by the Rev. H. C. Whitley, PH.D., D.D., Minister of St. Giles, in the course of which he mentioned how appropriate it was to hold this service in a church dedicated to St. Giles. The service was held in the chancel which holds at least 200 people and was nearly filled by Council, members and guests. The choir of 20 mixed voices with Mr. Herrick Bunney, B.MUS., F.R.C.O., A.R.C.M., at the organ was responsible for the music. The Introit and Anthem were perfectly sung and the reconditioned organ sounded magnificent in the hands of Mr. Bunney. The College Mace was carried in the Procession of Clergy and Officers of the College at the beginning and end of the service.

After the service the company proceeded to the George Hotel where they were received individually by the President and Lady Ritchie. The guest of honour was the Duke of Northumberland. The Lord Provost of Edinburgh was present as were Professor E. L. Hirst, F.R.S., President of the Royal Society of Edinburgh, Mr. Stanley Cursiter, Queen's Limner in Scotland, the President of the B.V.A. and Mrs. Jennings. Other guests of note included Sir Kenneth Cowan, Mr. T. D. Haddow, Mr. M. Campbell and representatives of the Ministries of Agriculture of the United Kingdom, Northern Ireland and the Irish Republic.

The toast to the Royal College of Veterinary Surgeons was proposed by the Duke of Northumberland.

The Toast of the Royal College

In the course of his remarks the Duke said that Sir John Ritchie's advice and help to the Agricultural Research Council, based upon so wide a knowledge, had been outstanding. He was very glad to have this opportunity of expressing his thanks to Sir John for the personal help which he had always given to him (the Duke) in his capacity as chairman.

The Duke was very happy to pay tribute to the high quality of teaching and research in the veterinary schools of both Edinburgh and Glasgow. There was, as his audience would know, a considerable shortage of research workers in this field, as in many others. There were last year 1,135 undergraduates in veterinary schools and 91 post-graduates; this ratio of post-graduate to undergraduate students was

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Rectal Temperatures in New-born Normal Puppies. —*Concluded.*

Within an hour all 5 animals had attained a rectal temperature between 96° and 97° F. and were warm, comfortable, relaxed, and asleep. Each puppy was kept in the incubator till whelping was completed, never less than 6 hours, and during this interval all the puppies remained at ease and asleep and rectal temperatures were stable (Fig. 4). This indicates that the rectal temperature of a normal puppy in the dry state soon after birth is below the range accepted as normal for the dog. This may be merely an apparent hypothermia and quite normal.

During routine examinations of new-born puppies some evidence has emerged that rectal temperatures may be a valuable indication of health. In the majority of litters at the 12th hour *post-partum* rectal temperatures lie between 86° and 97° F., mainly between 94° and 97° F. Rectal temperatures below 90° F. are constantly associated with definite changes in vigour. Such puppies are weak and unable to suck well. It is interesting to note that it is not always possible to pick out such puppies from a litter until " flight " and " maggot " reactions are stimulated and the " slow motion " test carried out.

Hypothermia, that is rectal temperatures less than 96° F., has recently been recognised as potentially a serious symptom in the new-born human infant (Bower, Jones & Weeks, 1960). It is stressed that, unless rectal temperatures are taken with accuracy, the initial signs of a condition termed, rather unfortunately, " primary cold injury " may be missed or completely misinterpreted, and sudden death of the neonate child may be attributed to quite different causes. This condition is found under systems of management not often considered cold.

Discussion

A cardinal feature of the normal domesticated mammal is a rather stable body temperature, and a knowledge of the normal temperature range of a given species is essential if proper clinical examinations are to be carried out. Routine temperature recording using a low reading clinical thermometer may prove of value in clinical examinations of new-born puppies since some degree of hypothermia is usual, but marked hypothermia is not likely to be compatible with health.

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lower than in other studies. It was a concern of the Royal College of Veterinary Surgeons to encourage students of the right calibre to promote research in their great profession. He called it "great" not as an idle compliment but because veterinary work had grown very rapidly in volume and that growth has come in large measure from the wise guidance of the Royal College of Veterinary Surgeons.

It was 170 years, the speaker went on, since one of his ancestors, with several other gentlemen, founded the Royal Veterinary College; the profession had travelled a very long way since then.

The work of the veterinary profession had grown very rapidly in the years since the war, and he was quite certain that it would continue to expand not only in this country but in the Commonwealth. There were many countries almost entirely dependent upon agriculture for prosperity and livelihood in a hungry world.

In this country many people were unaware of the vast field which existed for veterinary research. This was perhaps because so many diseases had been eradicated—bovine tuberculosis for example. The more intensively animals were kept, however, the more certain the problems were to increase rather than to diminish.

The President's Reply

In replying to the toast the President said it gave him the very greatest pleasure that the Council decided that today's meeting should be in Edinburgh. He was sorry Professor Boddie was ill, and unable to come; he (the President) would like to convey the company's sympathy and good wishes to him.

There were one or two things in connexion with the Royal College which Sir John felt he ought to mention. First of all, as forecast last year, the College had sold the old site of the historic building in Red Lion Square, and had not done too badly for it. They received £195,000—a sizeable sum—although when modern property values were considered it was not over-much. He felt that the time would come when the College would have to appeal to people to help with additional sums of money to carry on the important functions of the College, and to expand the library to the extent he would wish.

Another matter of interest, he thought, referred to that other important veterinary body, the B.V.A. Sir John thought that this was the occasion to mention the suggestion that there should be joint headquarters. There were, of course, obvious attractions, at first sight but the Officers of both bodies had looked at the point separately and jointly, and had reached the conclusion that there was no advantage which would justify them considering joint headquarters. This would be the subject of a joint announcement at an early date.

He had mentioned that he felt encouraged that the veterinary schools in Scotland were making such wonderful progress. It was to the future they had to look for the well-being of the veterinary profession, and obviously, that included its schools. Until fairly recently staffs had been inadequate, and the support they received was insufficient for the work they had to do; it was very necessary for the future that the schools should take a full part in all necessary research and in the problems that presented themselves from time to time.

The Guests

The health of the guests was proposed by Professor A. Robertson, a member of Council and Director of the Royal (Dick) School of Veterinary Studies. He said that they welcomed the Duke of Northumberland as chairman of that Council which distributed largesse to the tune of £5 million per annum! They welcomed him even more in that he took an interest in veterinary matters. Indeed, those of them who might on occasion have been a little critical of the Agricultural Research Council because of the small proportion devoted to veterinary research took comfort in the fact that it now had at its head someone who appreciated very clearly the benefits of putting money on outsiders!

The Royal College welcomed representatives of various Government departments; the Ministry of Agriculture was represented by Mr. Hensley, Mr. Quick and Mr. Campbell, while from the Department of Health for Scotland were Sir Kenneth Cowan and Mr. Haddow. The Department of Health had shown a long and happy co-operation, which still continued and contributed to the helpful way in which the Royal College was met recently in its representations on the revised regulations for meat inspection in Scotland.

Professor R. Cruikshank, M.D., of the University, who replied on behalf of the guests said that in Edinburgh they were very glad indeed that the Royal (Dick) Veterinary School was now part of the University. In his Department of Bacteriology they had a very close link with the school, and this was something which they ought to foster as much as they could. He was very glad indeed that the Duke should have stressed the growing responsibilities of veterinary medicine. That was something all realised and appreciated, and the more the medical and veterinary Departments could work together for mutual benefit the better it would be.

The Annual General Meeting

The annual general meeting was held within the Royal (Dick) School of Veterinary Studies. The Hall of the School was filled with members of the profession and their wives.

Apart from the elections to Council whose results were published in THE VETERINARY RECORD last week, and the approval of the annual report and accounts, the main other business was the presentation of Awards as listed below. To the general pleasure all the recipients were present. The list was as follows:

John Henry Steel Memorial Medal, William Fleming Hoggan Jarrett, William Rowan Kerr.

Livesey Medal, Sydney Jennings. (Miss) Barbara Mabel Quartermaine Weaver.

(Concluded at foot of column 1 opposite)

Mr. L. Guy Anderson, M.R.C.V.S., D.V.M., President of the Royal College of Veterinary Surgeons 1961-62

The New President of the R.C.V.S.

Mr. L. Guy Anderson, M.R.C.V.S., D.V.M.

At a special meeting of the Royal College Council held in Edinburgh on June 7th Mr. L. Guy Anderson who had been since 1959 vice-President was unanimously elected to the presidential office. The honour thus accorded him sets the seal upon a distinguished career which included the presidency of the British Veterinary Association (then the N.V.M.A.) in 1947-8. His two immediate predecessors having been respectively Chief Veterinary Officer to the Animal Health Division of the Ministry, and a University Professor, it seems fitting that the turn has now come for another private practitioner to hold office. In allowing their choice to fall upon Mr. Anderson the College Council could hardly have found anywhere a more typical, popular and deeply respected practising veterinary surgeon.

He was born in London on December 20th, 1909, and was educated first at the Haberdasher's School from which he matriculated in 1927. Before entering Reading University to read a short course in Agriculture he spent a year as a pupil on a farm in Berkshire. This would seem to have whetted his appetite, for in 1929 he emigrated to Canada and spent the next three years in farming. It was during that period that his interest in livestock moved him to consider the veterinary profession as holding the major attraction for him, and he became a student at the Ontario Veterinary College, graduating from the University of Toronto in 1936. Having decided to practise his profession in England he returned to London and obtained permission to sit the final examinations for the M.R.C.V.S. Diploma which he was awarded in July, 1936.

Like many new graduates he became first an assistant in general practice and having spent 18 months in that capacity he settled in Aylesbury in Buckinghamshire where he has since built up a large and flourishing mixed practice of which he is principal. It is evidence of the high regard in which he has long been held that Mr. Anderson at the age of 37 became the youngest President of the B.V.A., being raised to that office, as already mentioned, in September 1947. He had already been President of the Royal Counties Division and a councillor of the parent body where he was appointed chairman of the Editorial and the Organising committees. The accomplishment with which he acquitted himself during many years' service for the B.V.A. ensured his election to the Council of the R.C.V.S. in 1948. He has served on the Council ever since that time.

In addition to his professional work the new President has wide interests including much work for the Boy Scouts Association, fishing, gardening and a number of sports. He is married, with four children, and those whose privilege it has been to receive his hospitality know him as a most generous and delightful host. In early middle age Mr. Anderson is at the height of his powers and reputation. He is shrewd and far sighted in Council, forthright yet courteous in speech, and possesses a vigour of mind and body that many will envy. He has richly merited the honour which now is his, and the whole profession will welcome his election and wish him Godspeed and good fortune.

R.C.V.S. Day.—*Concluded.*

Francis Hogg Prize, Somerset Frederick John Hodgman, Donald Douglas Lawson.

The R. W. Hall of Barry, Glamorgan, Prize, John Beveridge White.

The J. T. Edwards Memorial Medal, Hubert Henry Skinner.

Fellowship by Examination, Paul Reginald Greenough ("Observations on some diseases of the bovine foot"). (Miss) Celia Mary Hoe ("An investigation into liver function in dogs, under conditions of health and disease").

At the conclusion of the annual general meeting members and guests were entertained to tea in the students' refectory.

CONGRESS THEATRE TICKETS

We are asked to advise readers that the whole allocation of seats for performances at the Stratford Memorial Theatre has been taken up and no further applications can be accepted.

EXPERIENCES WITH PET BUDGERIGARS

Attention is drawn to the fact that the *post-mortem* examinations referred to in this paper by Churchill Frost were conducted by the author of a survey of *post-mortem* findings in budgerigars (Beach, 1961), and are included in this survey which is awaiting publication.

Reference

BEACH, J. E. (1961). "Diseases of Budgerigars and Other Cage Birds." *Vet. Rec.* In the press.

PROGRESS IN DOG VIRUS RESEARCH

Scientists have isolated the new distemper virus which has been affecting dogs in many areas. The scientists, working in the laboratories of the Wellcome Foundation Ltd., have succeeded in cultivating the virus outside the animal and found it to have several different features to the known virus.

Work is continuing to find a modified vaccine to give complete immunity against the new distemper. —*The Times.*

Current Literature

ABSTRACTS

Effect of Age Factor on Mortality in *Salmonella typhimurium* Infection in Turkey Poults. BIERER, B. W. (1960). *J. Amer. vet. med. Ass.* **137.** 657.

When poults of varying age were dosed with cultures of *Salmonella typhimurium* the following mortality rates were obtained:—

6 hours old: 90 per cent.
24 hours old: 20 to 60 per cent.
48 hours old: 0 to 20 per cent.
72 hours old: Nil.

There was a similar gradation in the number of poults showing caecal casts.

The author points out that the results emphasize the need for thoroughly cleaning and disinfecting premises to be used by young poults and for supplying preventive medication in the food and water.

Chemical Control of Onset of Egg Production. WEISS, H. S., FISHER, H., & GRIMINGER, P. (1960). *Poult. Sci.* **39.** 1,221.

Poultrymen commonly restrict the food or light of young pullets in order to delay the onset of egg production.

The authors report that feeding 0.04 per cent. of Nicarbazin in the food for 2 months following the onset of egg production had a similar effect. Egg production returned to normal within a month, and remained normal for the further month of the experiment. They emphasize that the technique needs further study before it can be recommended for practical use.

Effect of Reserpine on Growth and Endocrine Relationships in Large Type White Turkeys. ANDERSON, D. L., & SMYTH, J. R. Jr. (1960). *Poult. Sci.* **39.** 1,080.

The tranquillizing drug reserpine has been used to suppress fighting among turkeys and to combat the mortality from aortic rupture.

The present investigation showed that poults receiving reserpine from 1 day old at the rate of 0.25 mg. per kg. of food showed depressed growth and food conversion at 3 and 6 weeks of age. After 6 weeks they became physiologically adapted to the drug, and showed no growth depression either from continued dosage at the 0.25 mg. per kg. level or from 0.5 mg. per kg. When poults were reared for 10 weeks on an unmedicated ration and then given reserpine at 0.25 mg. per kg., they showed no retardation until 20 weeks of age.

The effects seemed to be related to an increase in thyroid size, with atrophy of the secretory epithelium and increased colloid storage. This mild hypothyroidism may have resulted from a partial inhibition of pituitary thyrotropin secretion.

The 0.25 mg. per kg. level did not seem to affect the amount of fighting.

Factors Affecting the Incidence and Severity of a Breast Blister Condition in Broilers. STEPHENSON, E. L., *et. al.* (1960). *Poult. Sci.* **39.** 1,520.

Four feeding trials were run to study the effect of the following factors on the incidence and severity of breast blisters in broilers: sex, weight, age; type, depth and use of litter, and the feeding of antibiotics, furazolidone and additional fat.

The only factors that appeared significant were market age, sex, and breed, although the latter factor seemed to give a difference only in male birds.

The highest incidence was in male birds marketed at the older ages (namely 11 weeks), but the incidence was also higher in male birds than in females of the same weight.

E.A.G.

Suprapubic Cystotomy in a Gelding. LOWE, J. E. (1960). *Cornell Vet.* **50.** 510.

The subject was a 14-year-old, 940-lb. saddle horse admitted to the New York State Veterinary College in October 1959, with a history of polyuria, dribbling of urine, and tenesmus after micturition, but no haematuria. Rectal palpation disclosed a large cystic calculus.

A suprapubic cystotomy was performed under general anaesthesia, the horse being placed in dorsal recumbency with the hind legs spread and the hind parts raised by means of a swingle-tree and hoist. A 20-cm. incision was made mid-way between the mid-line and the medial commissure of the external inguinal ring, beginning just in front of the pubic brim, and extending forwards in an obliquely paramedian direction towards the umbilicus. It was possible to make an 8-cm. vertical incision into the fundus of the bladder by having the viscus stabilised and drawn forwards through the medium of 2 stay sutures. The pear-shaped stone was closely engaged to the mucosa of the bladder and required digital separation all over its periphery before it could be removed; it measured 11 × 8 × 6 cm. It consisted of calcium carbonate.

The bladder incision was repaired by inserting a continuous suture of 00 chromic catgut into the mucosa and a suture of No 1 chromic catgut for its remaining thickness The layers of the laparotomy wound were separately sutured.

Antibiotic treatment comprised 250,000 units of penicillin deposited on to the bladder mucosa, 500,000 units sprayed into the abdominal cavity, and, after the operation, penicillin and streptomycin given intramuscularly for 3 days, as well as 5 litres of 6 per cent. glucose each day. Vitamin B complex was injected for the first 8 days post-operatively.

Two weeks after the operation the animal had gained 42 lb. in bodyweight and was alert and active.

In a short discussion of this case the writer states that a suprapubic cystotomy for cystic calculus is preferable to the classical subischial urethrotomy because the surgeon can see what he is doing and there is less likelihood of failure to remove the whole calculus; also, the surgical incisions should heal by first intention.

G.H.A.

News and Comment

LATE DELIVERY OF "THE VETERINARY RECORD"

From time to time readers have drawn our attention to the fact that their "Records" are not received on Saturday mornings. The Editor has again taken this matter up very strongly with the General Post Office, and a constructive reply has been received together with an undertaking that a full investigation will be made. The Post Office authorities have asked for details of late deliveries and for post-marked wrappers where possible. Readers would help very much in making the promised investigation fruitful if they would send all complaints of late delivery as soon as possible to the Editor.

THE AMERICAN VETERINARY MEDICAL ASSOCIATION

The annual meeting of this Association will be held in Detroit, Michigan, from August 20th to 24th, 1961. The Registrar of the Royal College of Veterinary Surgeons, College House, 29/31 Wright's Lane, London, W.8., would be very glad to hear of any members of the College who may be intending to be present.

THE JOINT MEASUREMENT SCHEME

At the Cheshire Agricultural Show a 14.2 hh. show pony, "Nautch Girl," exhibited by Mr. J. Masserella, was objected to under the rules of this scheme. The pony was re-measured by two referees and the objection was upheld.

UNIVERSITY NEWS

Glasgow

The following students passed the final B.V.M.S. degree, and will graduate on July 8th next.

Atang, Protus G.; Crawford, Iain; Dabell, John S.; Deans, Robert W.; Ferguson, Donald A.; Galbraith, Brian D.; Heeley, Rachel M.; McLelland, John; Miller, David J. S.; Miller, Thomas A. (Distinction Surgery); Mollison, Athole; Nyarko, Daniel; Peek, Ian S.; Richards, Robert S.; Saunders, Robert W.; Selman, Ian E.; Shaw, Duncan; Smeaton, Peter D.; Todd, James N.; Wheeldon, Anne; Wishart, David F. (Distinction Surgery); Wyburn, Robert S. and Young, Richard, G. E.

R.C.V.S. OBITUARY

ANDREW, William. 3 Bass Terrace, Thorne Road, Doncaster, Yorks. Graduated from the University of Liverpool, Faculty of Veterinary Science, December 19th, 1914. Captain, late R.A.V.C. Died October, 1960.

PEARCE, (Mrs.) Barbara Anne (*née Hutton*), Abbots Fall, Long Common, Claverley, Wolverhampton, Staffs. Graduated from the Royal Veterinary College, London, December 20th, 1935. Died June 18th, 1961, in a London hospital, aged 48.

PERSONAL

Marriage

JAMES—GERRARD.—On Saturday, June 24th, 1961, at St. Luke's Church, Great Crosby, Liverpool 23. Walter James, B.V.SC., M.R.C.V.S., of Wellington, Salop, to Audrey Winifred Gerrard, of Great Crosby, Lancs.

MILLER—HATTERSLEY,—on Saturday, June 24, 1961, at St. Margaret's Church, Sheffield, 9, John Keith Miller, B.V.SC., M.R.C.V.S., of Formby, Lancashire, to Jean Hattersley of Sheffield.

Births

ADSHEAD.—On June 3rd, 1961, to Lois, wife of Philip Adshead, B.V.M.S., M.R.C.V.S., of Flat III, 26 Whitley Wood Road, Reading, Berks., a son, Simon Philip.

DOWNES.—On June 18th, 1961, to Mariann, wife of Jim Downes, M.R.C.V.S., Knights Cottage, Ball Hill, Newbury, Berks., a son, William George, brother for Charles.

HOLT.—On June 16th, to Josephine, wife of Eric A. Holt, B.VET.MED., M.R.C.V.S., at The Colony Hospital, Grenada, West Indies, a daughter, Jenny Frances, sister to Ena.

HOCKENHULL.—On June 14th, 1961, to Beth, wife of W. E. F. Hockenhull, M.R.C.V.S., at Nantwich, a son.

LANCASTER.—On Monday, June 12th, 1961, to Doris, wife of R. Lancaster, B.V.SC., M.R.C.V.S., a son, Martin, brother for Mark.

LEWIS.—On June 14th, 1961, at Carmarthen, to Jan, wife of R. D. Lewis, B.VET.MED., M.R.C.V.S., a daughter, Jacqueline Anne.

MAY.—On June 23rd, 1961, to Gemma, wife of J. N. T. May, M.R.C.V.S., of The Red Cottage, Longdon Heath, Upton on Severn, Worcs., a son.

WILLIAMSON.—To Marion, wife of Alan Williamson, B.V.SC., the gift of a son, John Baden, brother for David Andrew and Helen Faith.

WILSON.—On June 13th, 1961, at Brandon, Suffolk, to Joy, wife of G. W. C. Wilson, B.V.SC., M.R.C.V.S., a daughter, Sally Elizabeth, sister for Jennifer.

WOODE.—On June 8th, 1961, to Shirley, wife of Gerald N. Woode, of 7 Clovelly, Littlestone, New Romney, Kent, a daughter, Clair Elizabeth Nottidge.

COMING EVENTS

July

5th (Wed.). A.V.T. & R.W. (NORTHERN REGION). Summer Meeting at the Veterinary Investigation Centre, Quarry Dene, Westwood Lane, Leeds, 16, 12 noon.

12th (Wed.). B.S.A.V.A. (MIDLAND REGION). Meeting at the Randolph Hotel, Oxford, 8.15 p.m.

13th (Thurs.). B.S.A.V.A. (SUSSEX REGION). Meeting at the Ciba Laboratories, Horsham, 8.30 p.m.

14th (Fri.). ZOOLOGICAL SOCIETY OF LONDON. Meeting of veterinary surgeons interested in the treat-

ment of captive wild animals and exotic pets at the Main Offices, Zoological Society of London, Regent's Park, London, N.W.1, 10 a.m.

A.V.T. & R.W. (SOUTHERN REGION). 18th Ordinary Meeting at the University of Cambridge, School of Veterinary Medicine, 12 noon.

YORKSHIRE VETERINARY SOCIETY. Meeting at the Parkway Hotel, Broomhope, Leeds, 2.30 p.m.

15th (Sat.). B.S.A.V.A. (SOUTHERN COUNTIES). Meeting at the Grange, Osborn Road, Fareham, Hants, 7.30 p.m.

19th (Wed.). EASTERN COUNTIES VETERINARY SOCIETY. Annual General and Summer Meeting at the Duke's Head Hotel, Tuesday Market Place, King's Lynn, Norfolk, 11 a.m.

21st (Fri.). R.A.V.C. DIVISION. Meeting at the Balmer Lawn Hotel, Brockenhurst, Hants., 11 a.m.

24th (Mon.) CENTRAL VETERINARY SOCIETY. Visit to the Post-graduate Medical School, Hammersmith, 2.30 p.m.

September

2nd (Sat.). STREATLEY '58 CLUB REUNION. Annual Dinner at "Ye Miller of Mansfield."

3rd to 9th (Sun. to Sat.). 79th Annual Congress and Exhibitions of the British Veterinary Association at Oxford

7th (Thurs.). ROYAL VETERINARY COLLEGE ASSOCIATION. Annual Dinner during the B.V.A. Congress at St. Edmund's Hall, Oxford.

QUARTERLY MEETINGS OF COUNCIL AND STANDING COMMITTEES

Tuesday, July 18th, 1961
5 p.m. Finance Sub-committee.

Wednesday, July 19th, 1961
10.30 a.m. Farm Livestock Committee.
12 noon. Parliamentary and Public Relations Committee.
2.15 p.m. Veterinary State Medicine Committee.
4 p.m. Home Appointments Committee.

Thursday, July 20th, 1961
10.30 a.m. Small Animals Committee.
2.15 p.m. General Purposes and Finance Committee.
(All the above will be held at 7, Mansfield Street.)

Friday, July 21st, 1961
10.15 a.m. Council. (Connaught Rooms, Great Queen Street.)

Letters to the Editor

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

R.C.V.S. Council Elections

Sir,—May I be permitted, through THE VETERINARY RECORD, to thank those members of our profession who voted for me at the election for Council of the Royal College of Veterinary Surgeons?

Yours faithfully,
R. LOVELL.

Department of Pathology,
Royal Veterinary College,
Royal College Street,
Camden Town,
N.W.1.
June 26th, 1961.

Two Interesting Equine Cases

Sir,—I would like to record the following cases which may interest members in equine practice.

Case No. 1

Subject: 5-year-old bay English racehorse.

History: The horse arrived at the Singapore Turf Club Equine Hospital with a history of having had a long-standing facial sinusitis which had failed to respond to antibotics.

Symptoms: General condition very good. Appetite and temperature normal. There was a honey-coloured discharge containing flecks of pus from the left nostril which was almost totally occluded. The stomach tube met with resistance about level with the anterior wall of the frontal sinus (head horizontal) but reasonable pressure was sufficient to overcome this and the tube could then be passed into either trachea or oesophagus with ease.

Over the frontal sinus and extending downwards over the maxillary sinuses on the left side there was slight enlargement of the face and dullness on percussion over the area. Pressure over the frontal sinus caused slight pain.

There was no reaction to pressure over the maxillary sinuses.

Diagnosis: Pus in the sinuses the condition probably having been kept in check to some extent by the prolonged administration of antibiotics. There was an obstruction in the left nasal chamber but whether this was due to a neoplasm or an inflammatory swelling could not be decided. Possibly there was some connexion between the cause of the obstruction and the sinus condition.

Treatment: It was decided first to drain the sinuses. A "wait and see" attitude was adopted towards the nasal obstruction.

The frontal sinus was opened midway on the line joining nasal canthus and mesial suture, the inferior maxillary sinus an inch in from the lower end of the zygomatic ridge, and through drainage established between both maxillary sinuses. A copious amount of pus was flushed out with a solution of permanganate and water.

At the end of a week, during which the sinuses were flushed out morning and evening, the nasal discharge had ceased and breathing was practically normal. Two days later the plugs were removed permanently from the openings into the sinuses and the latter closed up rapidly. The superficial skin wounds had almost healed and the horse was appa-

rently normal when a bilateral offensive purulent nasal discharge appeared. This increased rapidly in volume within a few days. Breathing became very laboured and was accompanied by a soft wheezing cough. Temperature remained normal.

The stomach tube could not now be inserted further than the level of the eye on the left side. On the right side no obstruction was encountered in the nasal chamber and though the tube seemed to pass automatically into the oesophagus without any swallowing action taking place it could not be inserted into the trachea. At this stage the horse was in real distress and it was decided to put him down.

Post-mortem Findings: On the left side a large neoplasm was found firmly wedged between the anterior turbinated bone and the nasal septum which was deflected towards the right. The tumour was loosely connected, by a very fine pedicle about 1 cm. long, to the mucous membrane of the nasal septum and occupied about one-third of the area between the turbinated bone and the septum. Attempts to lift it out failed and it was then found that the tumour in the nasal chamber was only part of a larger growth occupying the area already described and the greater part of the pharynx as far back as the entrance to the larynx.

"Both" tumours were connected by a narrow neck which had to be severed before the whole could be released. The anterior portion was then lifted from the nasal chamber while the remaining part was removed posteriorly through the pharynx.

The following is a histological report on the tumour. "The tumour is composed of loose fibrous tissue arranged in interlacing bands and shows extensive mucoid degeneration. The surface is covered by a thinned squamous epithelium which shows numerous focal areas of superficial infection and ulceration. The tumour is a benign fibroma and, although not malignant, of a type likely to recur."

Case No. 2

Subject: 4-year-old chestnut Irish gelding.

History: The horse was having his first race after a lapse of several months having, in the meantime, been treated for an injury. He ran a "good" race in the circumstances and was returned to his box in the usual way. Approximately 15 minutes later the horse collapsed without warning.

When first seen he was lying quietly on his right side and was eating grass handfed by his syce. He did not appear to be in pain and showed no anxiety, though the conjunctiva was injected and the pulse was rapid and thready. At the time, due to local circumstances, only a hurried examination was possible and, apart from ensuring that no bones were broken and that the horse was comfortable, nothing further could be done for the time being.

About 3 hours later the horse was seen again. He was now comatose and the trainer asked to have him put down. It was reported that at no time had the horse shown any sign of pain nor had any struggling taken place.

The following morning, about 14 hours after death, a *post-mortem* examination was made.

Only very partial *rigor mortis* had taken place. When the carcase was opened a peculiar not unpleasant odour was noted. There was practically no blood clotting and the blood was light chocolate in colour. Even the smaller incised vessels continued to bleed throughout the examination. The flow of blood from sections of large muscles could best be described as "weeping." Haemorrhages, varying in severity, were seen on the visceral surface of the stomach and small intestine. It was decided to have the contents of the stomach analysed and this organ was ligatured off and removed from the abdomen.

The liver was macroscopically normal as were also the spleen and kidneys. About half a pint of urine —all that was present—was siphoned from the bladder for analysis. Lungs were normal. Petechial haemorrhages were noted on the heart, which was enlarged, pale and flabby and full of only very partially coagulated blood. The walls of the chambers were stained black.

The stomach and urine were left in a refrigerator overnight and the following day analysed by Dr. Rintoul, consultant analyst to the Straits Racing Association, who reported as follows:—

"Stomach slightly blown and when opened much foul gas was emitted. The contents weighed approximately 12 lb. and consisted of grass in the process of digestion.

"Analysis of the stomach contents failed to reveal the presence of any alkaloids, arsenic, barium, phosphorus or warfarin. Further analysis revealed the presence of 1, 2, 3, 4, 10-10 hexachloro—6-7 epoxy 1, 4, 4a, 5, 6, 7, 8, 8a—octahydro—1, 4, 5, 8, dimethanonaphtalene (commonly known as "Dieldrin") in amount approximately 5g. (equivalent to 12 mg. per kg.).

"Analysis of the urine failed to reveal the presence of "Dieldrin." Further analysis revealed the presence of salicylic acid in small amount but this may have been a normal function of this equine. (Lederer & Palonsky, 1948.) On the other hand it may be present as the metabolite of quite a number of substances including some of the coumarins."

The stomach was returned by the analyst who had noted that the mucosa was not normal.

The following report on this organ was received from the laboratory.

"Histology reveals patchy ulceration and necrosis of both the squamous and glandular portions of the

viscera. There is a generalised leucocytic reaction in the submucosal layer and between the epithelia and lamina meucalaris mucosae. This reaction is slightly more prominent at the sites of ulceration.

"These appearances are non-specific.

"In my opinion the ulceration of the stomach has been present for at least 6 hours. I regret that the histological features do not allow of a more definite timing."

The attached photograph shows how extensive was the injury to the gastric mucosa.

It is remarkable, considering the extent of ulceration of the stomach wall, that this horse showed no sign of illness and was in apparently perfect health right up to the time of collapse.

Despite the fact that "Dieldrin" was found in the gastric contents it was not present in lethal amount nor, apart from the coma, did any of the *pre* or *post-mortem* symptoms conform with those of poisoning by one of the chlorinated hydrocarbon group. "Dieldrin" is widely used here as an anti-malarial spray and it is possible that the grass consumed while the horse was down was contaminated to some extent with this insecticide, accounting for its presence in the stomach after death.

Among other things, the analyst's reference to salicylic acid being present in the urine, possibly as a metabolite of one of the coumarins, brings warfarin poisoning to mind though warfarin was not found in the stomach contents. Warfarin-impregnated bran was, however, being used as rat bait in the stable area at that time.

Yours faithfully,

c/o Singapore Turf Club, M. J. HENIGAN.
P.O. Box 3011,
Singapore.
June 6th, 1961.

"The Age of the Horse According to the Teeth"

Sir,—We have three veterinary surgeons who are anxious to obtain a book which has long since been out of print. The title of the book is "The Age of the Horse According to the Teeth" by J. L. Frateur. If any member of the British Veterinary Association has a copy of this book and no longer requires it we should be very happy either to purchase the book from him and then supply it to the veterinary surgeon who is seeking it or, if the present owner of the book wishes to present the book to the veterinary surgeon who requires it and would send it to us, we would pass the book on.

If any of your readers is willing to respond to this suggestion we would ask him in the first place to write to us before actually sending the book so that we may make the necessary arrangements in advance.

Yours faithfully,

R. F. WEST,
Director,
Baillière, Tindall and Cox, Limited.
7 and 8 Henrietta Street,
London,
W.C.2.
June 21st, 1961.

"Elastration"

Sir,—This is a faithful old topic worthy of recurrent stimulation. Mr. D. Zwart and Mr. J. L. Jollans (*Vet. Rec* **73**. 455) claim that castration by the rubber ring method is the one of their choice in the tropics. Their reasons are interesting and appear to be the converse of what would normally be expected. The findings of Fenton *et al.* (1958) indicate that in a temperate climate the action of the elastic band tends to create an open wound and provide a site for fly infestation and bacterial invasion. The method would appear to create a similar problem in sub-tropical areas and farmers here are profitably encouraged to use the Burdizzo castrator. Where elastration is preferred use is correctly recommended during the first week of life.

Mr. Zwart and Mr. Jollans refer to the subject of urolithiasis in goats and appear to relate the condition to "elastration." In 1956-7 I encountered several cases of the condition at the Agricultural Research Council Field Station, Compton, Berkshire. Blockage of the processus urethrae was common and was thought to be related to diet. The procedure was either to clear the processus (which was often occluded again within a few days) or to extirpate it, after which urethral blockages ceased and the goats lived normally. One or two cases in sheep have been treated in a similar fashion. One particular case in a goat may be of interest:—

An 18-month-old uncastrated male was reported to have a grossly distended abdomen. The processus urethrae was occluded, and final extirpation brought no relief. A laparotomy revealed a ruptured bladder, with a slit 1½ inches long extending postero-dorsally from the fundus. Between 1½ and 2 gallons of urine were removed from the abdomen and the bladder was sutured. With careful medication the animal survived. It would be interesting to hear if anyone has yet proved whether or not extirpation of the processus urethrae incapacitates the animal for future breeding purposes.

Yours faithfully,

Department of Agriculture, B. K. FENTON.
P.O. Box 28,
Nassau,
Bahamas.
June 16th, 1961.

Reference

FENTON, B. K., ELLIOT, J., CAMPBELL, R. C. (1958). *Vet. Rec.* **70**. 101.

Triplet Bull Calves

Sir,—On June 11th I was called to a calving case and proceeded to deliver 3 bull calves all dead (probably within the last 72 hours), weighing 71 lb., 69 lb. and 67 lb. respectively.

The cow was a Shorthorn × Ayrshire, calving down for the fifth time. She had been inseminated with semen collected from a Hereford bull. The gross weight of the calves, I think, is the interesting thing about the case.

Yours faithfully,

112, Corve Street, W. J. KERR.
Ludlow.
June 15th, 1961.